Refine Search

Search Results -

Terms	Documents
L19 and L20	6

Database: US Pre-Grant Publication Full-Text Database; US Patents Full-Text Database; US OCR Full-Text Database; EPO Abstracts Database; JPO Abstracts Database; Derwent World Patents Index; IBM Technical Disclosure Bulletins

Search: L21

Refine Search | Recall Text | Clear | Interrupt

Search History

DATE: Tuesday, June 21, 2005 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
DB=USOC; PLUR=YES; OP=ADJ			
L21	l19 and L20	6	L21
L20	saponifiable$1 and L18	21	L20
L19	non-saponifiable$! and L18	6	L19
L18	extracts and (amaranth or anise or avocado or barley or briza or guayule or jojoba or jurinea or laurel or olestra or olive or tall or vegepure) oil	1314	L18
DB=PGPB,USPT; PLUR=YES; OP=ADJ			
L17	non-saponifiable$! and L16	29	L17
L16	saponifiable$1 and L13	65	L16
L15	saponifiable$1 and L14	2	L15
L14	l7 and L13	21	L14
L13	L12	15739	L13
L12	extracts and (amaranth or anise or avocado or barley or briza or guayule or jojoba or jurinea or laurel or olestra or olive or tall or vegepure) oil	15739	L12
DB=EPAB,JPAB,DWPI; PLUR=YES; OP=ADJ			
L11	extracts and (amaranth or anise or avocado or barley or briza or guayule or jojoba or jurinea or laurel or olestra or olive or tall or vegepure) oil	651	L11

L10	(polar with hydrophilic with salts) and saponifiable	0	L10
DB=USOC; PLUR=YES; OP=ADJ			
L9	(polar with hydrophilic with salts) and saponifiable	0	L9
DB=PGPB,USPT; PLUR=YES; OP=ADJ			
L8	(polar with hydrophilic with salts) and saponifiable	3	L8
L7	(polar with hydrophilic with salts)	362	L7
L6	(polar with hydrophilic with salts) and (saponifiable with fraction)	2	L6
DB=USOC; PLUR=YES; OP=ADJ			
L5	(polar with hydrophilic with salts) and (saponifiable with fraction)	0	L5
DB=EPAB,JPAB,DWPI; PLUR=YES; OP=ADJ			
L4	(polar with hydrophilic with salts) and (saponifiable with fraction)	0	L4
L3	(polar with hydrophilic with salts) and (saponifiable with fraction)and (non-polar with unsaponifiable) and hydrolysis	0	L3
DB=USOC; PLUR=YES; OP=ADJ			
L2	(polar with hydrophilic with salts) and (saponifiable with fraction)and (non-polar with unsaponifiable) and hydrolysis	0	L2
DB=PGPB,USPT; PLUR=YES; OP=ADJ			
L1	(polar with hydrophilic with salts) and (saponifiable with fraction)and (non-polar with unsaponifiable) and hydrolysis	2	L1

END OF SEARCH HISTORY

Hit List

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Search Results - Record(s) 21 through 29 of 29 returned.

☐ 21. Document ID: US 6008205 A

L17: Entry 21 of 29 File: USPT Dec 28, 1999

US-PAT-NO: 6008205
DOCUMENT-IDENTIFIER: US 6008205 A

TITLE: Polyisoprenyl phosphate stable analogs for regulation of neutrophil responses

DATE-ISSUED: December 28, 1999

US-CL-CURRENT: 514/102; 514/106, 514/107, 514/108, 558/152, 558/155

APPL-NO: 08/ 832952 [PALM]
DATE FILED: April 4, 1997

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw Desc | Image

☑ 22. Document ID: US 5514709 A

L17: Entry 22 of 29 File: USPT May 7, 1996

US-PAT-NO: 5514709
DOCUMENT-IDENTIFIER: US 5514709 A

TITLE: Lipidic furans and retinol palmitate compositions useful for skin therapeutics

DATE-ISSUED: May 7, 1996

US-CL-CURRENT: 514/461; 424/59, 424/78.03, 514/844

APPL-NO: 08/ 142869 [PALM]
DATE FILED: October 25, 1993

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw Desc | Image

☑ 23. Document ID: US 5468490 A

L17: Entry 23 of 29 File: USPT Nov 21, 1995

US-PAT-NO: 5468490
DOCUMENT-IDENTIFIER: US 5468490 A

TITLE: Lipidic furans useful for skin therapeutics

DATE-ISSUED: November 21, 1995

US-CL-CURRENT: 424/78.03; 514/461

APPL-NO: 08/ 142808 [PALM]
DATE FILED: October 25, 1993

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw Desc | Image

24. Document ID: US 5393776 A

L17: Entry 24 of 29 File: USPT Feb 28, 1995

US-PAT-NO: 5393776
DOCUMENT-IDENTIFIER: US 5393776 A

TITLE: Tocotrienol analogs in the treatment of hypercholesterolemia and hyperlipidemia

DATE-ISSUED: February 28, 1995

US-CL-CURRENT: 514/486; 514/485, 514/605, 514/616, 514/617, 514/618, 514/619, 514/621, 514/622, 514/629, 514/64, 514/646 , 514/676, 514/688, 514/689, 514/708, 514/710, 514/713, 514/716, 514/717, 514/720, 514/727, 514/728, 514/730, 514/751, 514/764, 514/824, 560/24, 560/29, 560/30, 564/155, 564/157, 564/158, 564/161, 564/162, 564/163, 564/167, 564/169, 564/170, 564/175, 564/176, 564/177, 564/183, 564/218, 564/223, 564/305, 564/440, 564/442, 564/443, 564/8, 564/99, 568/1, 568/2; 568/27, 568/28, 568/30, 568/306, 568/31, 568/32, 568/33, 568/335, 568/336, 568/337, 568/35, 568/36, 568/37, 568/38, 568/39, 568/42, 568/43, 568/44, 568/45 , 568/46, 568/51, 568/54, 568/55, 568/56, 568/584, 568/587, 568/588, 568/6, 568/630, 568/648, 568/649, 568/650, 568/651, 568/654, 568/656, 568/657, 568/662, 568/663, 568/705, 568/706, 568/709, 568/715, 568/716, 568/764, 568/765, 568/766, 568/774, 568/780, 568/811, 568/812, 568/813, 570/128, 570/182, 585/24

APPL-NO: 08/ 242213 [PALM]
DATE FILED: May 13, 1994

PARENT-CASE:
BACKGROUND OF THE INVENTION 1. Field of the Invention This application is a continuation of Ser. No. 07/890,414, filed May 29, 1992, now abandoned, which is a continuation-in-part of Ser. No. 07/583,618, filed on Sep. 14, 1990, now abandoned.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Draw Desc | Image

25. Document ID: US 5348974 A

L17: Entry 25 of 29 File: USPT Sep 20, 1994

US-PAT-NO: 5348974
DOCUMENT-IDENTIFIER: US 5348974 A

TITLE: Tocotrienols in the treatment of hypercholesterolemia, hyperlipidemia and thromboembolic disorders

DATE-ISSUED: September 20, 1994

US-CL-CURRENT: 514/456; 514/356, 514/458

APPL-NO: 08/ 015778 [PALM]
DATE FILED: February 10, 1993

PARENT-CASE:
This application is a continuation of application Ser. No. 07/583,907 filed Sep. 17, 1990 now U.S. Pat. No. 5,217,992 which is a continuation-in-part of application Ser. No. 07/416,910 filed Oct. 4, 1989, now abandoned.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 26. Document ID: US 5217992 A

L17: Entry 26 of 29 File: USPT Jun 8, 1993

US-PAT-NO: 5217992
DOCUMENT-IDENTIFIER: US 5217992 A

TITLE: Tocotrienols in the treatment of hypercholesterolemia, hyperlipidemia and thromboembolic disorders

DATE-ISSUED: June 8, 1993

US-CL-CURRENT: 514/458; 514/824

APPL-NO: 07/ 583907 [PALM]
DATE FILED: September 17, 1990

PARENT-CASE:
This application is a continuation-in-part of U.S. application Ser. No. 416,910 filed Oct. 4, 1989, Now abandoned.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☑ 27. Document ID: US 5171577 A

L17: Entry 27 of 29 File: USPT Dec 15, 1992

US-PAT-NO: 5171577
DOCUMENT-IDENTIFIER: US 5171577 A

TITLE: Process for the preparation of foams which can be used in the cosmetics and pharmaceutical field and foams obtained by this process

DATE-ISSUED: December 15, 1992

US-CL-CURRENT: 424/450; 264/4.6, 424/283.1, 424/401, 424/405, 424/420, 424/47, 424/65, 424/73, 424/750, 424/758, 424/76.3, 424/764, 424/765, 424/776, 424/94.3, 514/945

APPL-NO: 07/ 474399 [PALM]
DATE FILED: February 6, 1990

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
LU	87.449	February 9, 1989

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☐ 28. Document ID: US 5097012 A

L17: Entry 28 of 29 File: USPT Mar 17, 1992

US-PAT-NO: 5097012
DOCUMENT-IDENTIFIER: US 5097012 A

TITLE: Solvent extraction of fatty acid stream with liquid water and elevated temperatures and pressures

DATE-ISSUED: March 17, 1992

US-CL-CURRENT: 530/206; 530/207, 530/208, 530/209, 552/545, 554/175, 585/332

APPL-NO: 07/ 468582 [PALM]
DATE FILED: January 23, 1990

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

☑ 29. Document ID: US 4792418 A

L17: Entry 29 of 29 File: USPT Dec 20, 1988

US-PAT-NO: 4792418
DOCUMENT-IDENTIFIER: US 4792418 A

TITLE: Method of extraction and purification of polyunsaturated fatty acids from natural sources

DATE-ISSUED: December 20, 1988

US-CL-CURRENT: 554/186; 435/134, 554/174, 554/211

APPL-NO: 06/ 810550 [PALM]
DATE FILED: December 19, 1985

PARENT-CASE:
CROSS-REFERENCE TO RELATED APPLICATIONS This is a continuation-in-part of Ser. No. 765,498 filed Aug. 14, 1985, now abandoned, the entire contents of which are hereby incorporated by reference.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Terms	Documents
non-saponifiable$! and L16	29

Display Format: - Change Format

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Refine Search

Search Results -

Terms	Documents
(polar with hydrophilic with salts) and (saponifiable with fraction)and (non-polar with unsaponifiable) and hydrolysis	0

Database:
US Pre-Grant Publication Full-Text Database
US Patents Full-Text Database
US OCR Full-Text Database
EPO Abstracts Database
JPO Abstracts Database
Derwent World Patents Index
IBM Technical Disclosure Bulletins

Search: L3

Refine Search

Recall Text | Clear | Interrupt

Search History

DATE: Tuesday, June 21, 2005 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
DB=EPAB,JPAB,DWPI; PLUR=YES; OP=ADJ			
L3	(polar with hydrophilic with salts) and (saponifiable with fraction)and (non-polar with unsaponifiable) and hydrolysis	0	L3
DB=USOC; PLUR=YES; OP=ADJ			
L2	(polar with hydrophilic with salts) and (saponifiable with fraction)and (non-polar with unsaponifiable) and hydrolysis	0	L2
DB=PGPB,USPT; PLUR=YES; OP=ADJ			
L1	(polar with hydrophilic with salts) and (saponifiable with fraction)and (non-polar with unsaponifiable) and hydrolysis	2	L1

END OF SEARCH HISTORY

L21: Entry 1 of 6 File: USOC Sep 8, 1964

DOCUMENT-IDENTIFIER: US 3148154 A
TITLE: Prevention and/or resolution of emulsions

OCR Scanned Text (6):
Variations on the above procedure can produce- otber branched polyamines. The branched nature of the polyamine imparts unusual properties to the polyamine and its derivatives. Cyclic aliphatic polyarnines having at least one secondary amino group such as piperazine, etc., can also be employed. It should be understood that diamines containing a secondary amino group may be employed. Thus, where x in the linear polyalkylene amine is equal to zero, at least one of the R's would have to be hydrogen, for ex,ample, a compound of the following formula: C18HS7 ,\T-CH2-CH2-NH2 11 Suitable polyamines also include polyaniines wherein the alkylene group or groups are interrupted by an oxygen radical, for example, R R 1, N- C.H2.OC.H2.N C.H2.0c.H2 R R or mixtures of these groups and alkylene groups, for example, R R R N- c -H2.0 C.,-,2. N _C.H2.N R R where R, n and x has the meaning previously stated for the linear polyamine. For convenience the aliphatic polyamines have been classified as nonhydroxylated and hydroxylated alkylene polyamino amines. The following are representative members of the nonhydroxylated series: Diethylene triamine, Dipropylene triamine, Dibutylene triamine, etc. Triethylene tetramine, Tripropylene tetramine, Tributylene tetramine etc. Tetraothylene pentamine, Tetrapropylene pentamine, Tetrabutylene pentamine, etc., Mixtures of the above, Mixed ethylene, propylene, and/or butylene, etc., POIYamines and other members of the series. The above polyamines modified with hi.-her rnolecular wei.-ht aliphatic groups, for example, those having from 8-30 or more carbon atoms, a typical example of which is H N]EI:--C2H4N-C2H4-N-C2H4N-CiaHB3 where the aliphatic group is derived from any suitable source, for example, from compounds of animal or vegetable origin, such as coconut oil, tallow, tall oil, soya, etc., are very useful. In addition, the polyamine can contain other alkylene groups, fewer amino groups, additional hi.-her aliphatic groups, etc., provided the polyamine has at least one reactive secondary amino group. Compositions of this type are described in U.S. Patent 2,267,205. Other useful aliphatic polyamines are those containing substituted groups on the chain, for example, aromatic groups, heterocyclic groups, etc., such as a compound of the forniula R-N-(ZNH).Il H where R is allyl and Z is an alkylene group containing phenyl groups on some of the alkylene radicals since the phenyl group is not attached directly to the secondary amino group. In addition, the alkylene group substituted with a hydroxy group NIII-CH2cH-CH2-N-CH2-CH-CH2NH2 I vit @H is reactive. 3,148,154 12 Polyamin-,s containin- aromatic groups in the main part of the chain are useful, for example, N,N'-dimethyl-pxylylenediamine. Examples of polyamines containing solely secondary amino groups include the following: CH3 0113 \ Hc2H4Nc2H4N H H 10 c2H5 c2H5 NC2H5NC2H4N H H H CH3 CH3 15 NC2H4Oc2H4N H / \ H C2H5 C2Hs / Hc2-H4OC2114N 20 H H CH3 CH3 H NCaH6NC3H6N H 11 25 CI-13 CH3 NC2H4NC21-14NC2ff4N H H H C 1-13 CH8 30 NC2H4NC21T4Nc2H4NC2114N ri / H H H \ 1-1 (CI-13)2NC2H4NC2H@iNC2H4NC2H4N(CH3)2 H H H Examples of polyamines having hydroxylated groups 35 include the following: CH3 CH3 NC2H4NC2H4N H HOC2H4 02H4011 40 (H 0 C2H4) 2NC2H4NC2H4N (C 2IT401I) 2 H C2115 C2H5 NC2H4NC2E[4N H HOC2H4 c2H40H 45 C113 CH3 NCaHaNc3H6N HOC2ff4 C2H40H CH3 CH3 50 N02H4NC2H4NC2E[4N H H H 0 C2-4 C2H40H CH3 CH3 NC2H4NC2114NC2H4Nc2n4N H H H 55 HOC2H4 C2H40H HOC2H4 C2H40H NC2H4NC2H4N C21I4NC2H4N / H II H CH3 CHa 60 '@-@uitable cyclic amidines include N-Crf2 I R-C \ N-CH2 65 N-CH2 R-C , I N- C 1-12 I 70 U2li4-NI-I-C2H4-NH2 N-CEI-CH3 R-C CH2 N-CH2 I 75 C2H4-NH-C2114-NH2

OCR Scanned Text (15):
29 TABLE XVIII.-THE ACYLATED PPOD-UCTS OF TABLES xiii, xiv, xv, xvi Gr,,iius of acid per Grams grani-niole w,,,iler . 5 Example Acid of oxyall:yl-- renidved ated product laAOA ---------- - Oleic ---------- 282 18 2aAOA ---------- Stearic ---------- 284 Is 10 3aAOA ---------- Oleic ---------- 282 18 4aAOA ---------- Stearic ---------- ----- 284 18 28aAOA ---------- Laurie ---------- 200 is IBAOA ---------- Oleic - ---------- 282 18 2bAOA ---------- ----- do ---------- 282 18 3bAOA --------- ------ Ste@@ric ---------- 2S4 is 4bAOA ---------- Oleic ---------- 282 is

23bAOA ---------- Stearic ---------- 284 18 15 2gbAOA ---------- Oleic ---------- -------- B64 36 3ObAOA ---------- ----- do ---------- 282 18 ICAOA ---------- Myristic ---------- 228 18 2cAOA ---------- Laurie ---------- 200 18 3cAOA ---------- Olele ---------- 282 is 4cAOA ---------- ----- do ---------- 282 18 ldAOA ---------- Stearic ---------- @168 "' 20 3dAOA ---------- ----- do ---------- 568 @16 3dAOA ---------- Oleic ---------- 564 36 4C,AOA ---------- ----- do ---------- @164 36 (1) BREAIGNG ATTD PREVENTING WATER-IN- OIL EMULSIONS 25

This phase of otir inveition relates to the use of oxy- alkylated and other prodlicts of the present invention in preventing, breakin.- or resolvin.@ emulsions of the water- in-oil type, and particularly petroleum emulsions. Their use provides a@i economical and rap:@d process for resol@,r- 30 ing petroleum emulsions of the water-in-oil type that are commonly referred to as "cut oil," "roily oil," "emulsified oil," etc., and which comprise fine droplets of naturally-occurring waters or brines dispersed in a more or less permanent state througi-iout the oil which conslitutes the .15 continuous phase of the emulsion. They also provide an economical and rapid process for separatin.- emulsions which have been prepared under controlled conditions from mineral oil, such as crude oil and relatively soft waters or weak brines. Controlled 40 emulsi'i5catio n and subsequent demulsification, under the conditions j@Ust mentioned, are of significant value in re- moving impurities, particularly inorganic salts, from pipe- line oil (i.e. desalting). Demulsificati on, as contemplated in the present appli- 45 cation, includes the preventive st(@ti of co-@nmin- in- the de- mulsifier with the aqueous component which would or might subsequently become either phase ol' the emulsion in the absence of such precautionary measure. Similarly, such demulsifier may be mixed with the hydrocarbon com- 50 ponent. These demulsifying agents employed in the treatment of oil field emulsions are used as such, or after dilution with any suitable solvent, such as water, petroleum hydrocar- bons, such as benzene, toluene, xylene, tar acid oil, cresol, 55 anthracene oil, etc. Alcohols, particularly aliphat@'c alco- hols, such as methyl alcohol, ethyl alcohol, denatired al- cohol, propyl alcohol, butyl alcohol, hexyl alcohol, oetyl alcohol, etc., are often employed as dillients. Miscel- laneous solvents, such as pine oil, carbon tetrachloride, sul- 60 fur dioxide extract obtained in the refining of petroleum, etc., are often employed as diluents. Similarly, the ma-terial or materials employed as the demulsifying agent of our process are often admixed with one or more of the solvents customarily used in connection with conven- 65 t;onal demulsifyin.- agents. Moreover, said material or materials are often used alone or in admixture with other suitable well- known classes of demtilsifying agents. These demulsifying agents are usefdl in a water-soluble form, or in an oil-soluble form, or in a form exhibiting 70 both oil and water-solubility. Sometimes they are used in a form which exhibits relatively limited oil-solubility. However, since such reagents a.-e frequently used in a ratio of I to 10,000, or I to 20,000, or I to 30,000, or even 1 to 40,000, or I to 50,000, as in desalting practice, 75 si-ich an dpparent insolubility in oil aftd water is not significant, because said reagen' s undoubtedly have solubility within such concentrations. In practiciilg our process for resolving petroletim emulsiois of the water-in-oil type, a treating agent or demulsifyiiig @gent of the kind above described is brought into contact with or cai-ised to act upon the emulsion to be treated, in any of the various apparatus now generally used to resolve or break petroleum emulsions with a chemicil reagent, the above procedure bein- used alone or in cor@ibination with other demi-ilsifying procedure, such as the electrical dehydration process. One type of procedure is to accumulate a volume of emulsified oil in a tank and conduct a batch treatment type of demulsification procedure to recover clean oil In this procedure the emulsion is admixed with the demulsifier, for example by agitating the tank of emtilsion and slowly dripping demulsifier into the emulsion. In some cases mixing is achieved by heati-,ig the emuls,@on while dripping in the deniulsifier, depending upon the convection etirrents in the emulsion to produce satisfactory admixttire. In a third modification of this type of treatme@it, a circulating pump withdraws emulsion from, e.g. the bottoni of the tank, and re-introduces it into the top of the tank, the demtilsifier being added, for example, at the suction side of said circulating pump. 1-@i seco-iid type of treating procedure, the demulsifie@- is introduced into the well fluids at the well-head or at some point between the well-head and the final oil storage tank, by means of an adjustable proportioning r@iechanism or proportioning pump. Ordinarily the ilow of fluids through the subsequent lines and fittings suffices to produce the desired degree of mixture of demulsifier and emulsion, although in some instances additional mixing devices may be introduced into the flow system. 1-@i this general procedure, the system may include various mechanical devices for withdrawing free water, separating entrained water, or accomplishing quiescent settling of the chemicalized emulsion. Heatin.- devices may likewise be incorporated in any of the treating procedures described herein. A third type of application (down-tlie-hole) of demulsifier to emulsion is to introduce the demulsifier either periodically or continuously in diluted or undiluted form into the well and to allow it to come ot the surface with the well fluids, and then to -iqow the chemicalized emulsion through any desirable surface

equipment, such as employed in the other treating procedures. This particular type of-application is decidedly useful when the demulsifier is used in connection with acidification of calcareous oil-bearing strata, especially if suspended in or dissolved in the acid employed for acidification. In all cases, it will be apdarent from the foregoing description, the broad process consists simply in introducing a relatively small proportion of demulsifier into a relatively large proportion of emulsion, admixing the chemical and emulsion either through natural flow or through special apparatus. with or without the application of heat, and allowing the mixture to stand quiescent until the desirable water content of the emulsion separates and settles from the mass. The following is a typical installation: A reservoir to hold the demulsifier of the kind described (diluted or undiluted) is placed at the well-bead where the effluent liquids leave the well. This reservoir or container, which may vary from 5 gallons to 50 gallons for convenie-iice, is connected to a proportioning pump which injects the demulsifier drop-wise into the fluids leaving the well. Such chemicalized fluids pass througb the flowline into a settling tank. The settling tank consists of a tank of any convenient size, for instance, one which will hold amounts of fluid produced in 4 to 24 hours (500 barrels to 2000 barrels capacity), and in which there is a perpendicular conduit from the top of the tank to almost the very bottom so as to permit the incoming fluids to

OCR Scanned Text (19):
37 disposal of aqiieous wastes is, in general, hampered by the presence of oil-in-water emulsions. Essential oils comprise no-@i-saponifi@able ma@Lerials like terpenes, lactones, and alcohols. They also contain saponifiable esters or mixtures of saponificable and nonsaponiflable materials. Steam distillation and other production procedures sometitnes cause oil-in-water emulsions to be produced, from which the valuable essential oils are difficultly recoverable. In aU such examples, a non-aqueous or oily material is emulsified in an aqueous or non- oily material with which it is naturally immiscible. The term "oil" is used herein to cover broadly the water-immiscible materials present as dispersed par-ticles in such systems. The nonoily phase obviously includes diethylene glycol, aqueous solutions, and other non-oily media in addition to water itself. The foregoing examples ilustrate the fact that, within the broad -,enus of oil-in-water emulsions, there are at least three important sub-genera. In these, the dispersed oily material is respectively non-saponiflable, saponiflable, and a mixture of non-saponifiable and saponiflable materials. Among the most iriportant emulsions of nonsaponifiable r@iaterial in water are petroleum oil-in-water emulsions. Saponifiable oil-in-water emi.Tlsions have di,persed phases comprising, for example, saponiflable oils and fats and fatty acids, saponifiable oily or fatty esters, and the organic eomponents of sueh esters to, the extent such compo-iients are immiscible with aqueous media. Emulsions produced from certain blended lubricating compositions containing both niineral and fatty oil ingredients are examples of the third sub-genus. Oil-i-i-water emulsions contain widely different prop<)rtions of dispersed phase. Where the emulsion is a waste product resulting from water fi-ashing of manufacturing areas or eqliipment, the oil con@tent may be only a few parts per million. Resin emulsion paints, as produced, contain a m-,ijor proportion of dispersed phase.
Naturallyoccurrin.- oil-field emulsions of the oil-in-water class carry crude oil in proportions varying from a few parts per million -to about 20%, or higher in certain cases. This phase of the present invention is concerned with the resolution of those emulsions of the oil-in-water class which contain a minor proportion of dispersed phase, ran.-ing, for example, from 20% or higher down to 50 parts per million or less. Althou,@h the present process relates to emulsions containing for example as much as 20% or more dispersed oily material, maiy if not most of them contain appreciably less than this proportion of dispersed phase. In fact, most of the emulsions encountered in the development of this invention have contained about 1% or less of dispersed phase. It is to such oil-in-water emulsions having dispersed phase voltimes of the order of 1% or less to which the present process is particularly directed. This does not rnean that any sharp line of demarcation exists and @that, for example, an emulsion containing 1.0% of dispersed phase will respond to the process, whereas one containin-. 1.1% of the same dispersed phase will reniain unaffected; but that, in general, dispersed phase proportions of the order of I% or less appear most favorable for application of the present process. In emulsions having high proportions of dispersed phase, appreciable amount of some emulsifying agent are probably present. to account fo@r their stability. In the case of more ditute emulsions, containing 1% or less 4of dispersed phase, there may be difficulty in accounting for their stability on the basis of the presence of an emulsifyin- a- ent in the conven@ional sense. For example, steam condensate frequently contains very small proportions of refined petroleum lubricating oil in extremely stable dispersion; yet nei@ther the steam condensate nor the refined hydrocarbon oil would appear to conta',n anything suitable to stabilize the emulsion. In 3,148,154 38 tated on some basis other than the presence of an emulsi- fying agent. The present process is not believed to depend for its ef@ectiveness on the application

of any simple laws, be- cause it has a high level of effectiveness when used to resolve emulsions of widely different composition, e.g., crude or refined petroleum in water or diethylene glycol, as well as emulsions of oily materials like animal or vegeta@ole oils or synthetic oily materials in water. 10 Some eniulsions are by-products of manufacturing proc.- dures in which the coinposition of the emulsion is known. In many inslances, however, the emulsions to b,- resolved are either naturally-occurring or are accidentally or unintentionally produced; or in any event they 15 do not result from a deliberate or premeditated procedi-ire. Irl ntimerous instances, the emulsifying agent is unknown and as a matter of fact an emulsifying agent, in the conventional sense, may be felt to be absent. It is obviously very difficult or even impossible to recommend 2o a resolution procedure for the treatment o'L such latter en-ulsions, on the basis of theoretical knowledge. Many of the most important applications of the present process are coricerned with the resolution of emulsions which are eil@her naturally-occurring or are accidentally, uninten- 25 tionally, or unavoidably produced. Such emulsions are commonly of the most dilute type, containing about 1% or less of dispersed phas-., althou.-h higher corcentrations are often encountered. The process which constitutes this phase of the present - 0 iiiventien consists in subjecting an emulsion of the oil-inwater class to the action bf a demulsifler of the kind de@ scribed, thereby causing the oil particles in the emulsion to coalesce sufficieptly to rise to the surface of the nonoily layer (or settle to the bottom, if the oil density is 35 greater) when the mixture is allowed to stand in the quiescent state after treatnent with the reagent or demulsiiier. Applicability of the present process can be readily determiiied by dire,-t trial on any emulsion, without refer- 40 ence to theoretical egnsiderations. This fact facilitates its application to naturally- occurrin@ emulsions, -,ind to emulsions accidentally, unintentionally, or unavoidably produced; since no laboratory experimentation, to discover the nature of the emulsion components or of 'Lhe emulsi- 45 fying agent, is req,,iired. Our reagents are useful in undiluted forr@i or diluted Niith any suitable solvent. Water is commonly found to be a highly satisfactory solv-@nt, because of its ready availability and negligible cost; but in some cases, non5o @qticous solvents stich as an aromatic petroleum solvent n-iay be fou.--id preferable. The products themselves may exhibit solubilities ranging from rather modest waterdispersibility to full and complete dispersibility in tiiat solvent. Because of the sa-iall proportions in which our 55 reagents are customar;ly employed in practicing our process, apparent solubility in bul@k has little significance. In the extremely low concentrations of use they undoubtedly exhibil appreciable water-solubility or water-dispersibility as well as oil-solubility or oil-dispersibility. 60 O@dr reagents n-iay be employed alone, or they may in some instances be employed to advantage admixed with other and compatible oil-in-water demulsiflers. Our process is commonly practiced simply by intro- ducing srnall proportions of our reagent into an oil-in-lass emulsion, agitating to secure distribution of 65 water ci the rea@ent and incipient coalescence, and letting stand until the oil phase separates. The proportion of reagent required will vary with the character of the emulsion to be resolved. Ord;narily, proportions of rea-,Cnt required 70 are from 1/10,000 to 1/1,000,000 by volume of emulsion treated; but preferetbly is 5-50 p.p.m. More rea.-ent ;s sometimes reqliired. We have found that the factors, reagent feed rate, agitation, and settling time are somewhat interrelated. For example, we have found that if such cases, emulsion stability mlist probably be predic- -,5 sufficient agitation or proper character is employed, the

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